

2013 Maryland FMP Report (August 2014)

Section 6. Black Sea Bass (*Centropristis striata*)

Chesapeake Bay FMP

Black sea bass favor structural habitats such as cold water corals in federal waters (>3 nautical miles offshore), oyster reefs in Chesapeake Bay, and natural hard bottom. Tagging studies indicate that black sea bass migrations are regional rather than coast wide. As a result, regional management has been implemented and the coastal management framework is evaluated on a yearly basis.

The Chesapeake Bay and Atlantic Coast Black Sea Bass Fishery Management Plan (CBFMP) was adopted in 1996. At that time, the black sea bass stock was overfished. The CBFMP was developed to reduce fishing mortality particularly on juvenile black sea bass. The Chesapeake Bay and coastal bays provide nursery areas for juvenile black sea bass which utilize reef structures and submerged aquatic vegetation (SAV). Protecting these two habitats is part of the Chesapeake Bay Program's habitat goals.

Black sea bass were incorporated as one component of the Atlantic States Marine Fisheries Commission (ASMFC) and Mid-Atlantic Fishery Management Council (MAFMC) joint management framework for summer flounder and scup in 1996 with a Black Sea Bass Fishery Management Plan (FMP). The FMP implemented permit requirements for charter boats, commercial fishermen, and seafood dealers; specifications for fishing gear; and criteria to designate special management zones around artificial reefs. A progressive implementation schedule was instituted to increase minimum length, reduce landings, modify gear, and introduce a commercial quota system. Several addenda (ASMFC), frameworks (MAFMC), and amendments have been implemented to modify the overfishing mortality threshold and target exploitation rates and quota management.

Addenda IV (2001), VI (2002), XVI (2005) improved upon the timeliness of developing and implementing management requirements. Framework 1 (2001) established a research set-aside quota. Amendment 13 (2003) was developed to reduce fishing mortality, improve yield, align and minimize jurisdictional regulations, and revised the commercial quota system. Addendum XII (2004) instituted state-by-state quota shares for the commercial fishery; Maryland's share is 11%. Addendum XIII (2004) established that commercial quota can be specified for up to three years at a time. Framework 5 (2004) allowed for establishing quota for up to three years at a time. Addendum XIX (2007) continued state-by-state commercial quota management which began in 2003. Framework 7 (2007) improved the efficiency of implementing management actions as stock status changed. Amendment 16 (2007) standardized requirements for bycatch reporting. Addendum XX (2009) streamlined the procedures for commercial quota transfer among states. Addenda XXI (2011), XXIII (2013), and XXV (2014) provided flexibility for

regional management measures. Amendment 15 (2011) established control rules and accountability measures for stock management which were subsequently modified by Amendment 19 (2014). Coastal states from South Carolina to Maine are required to submit an annual compliance report to ASMFC on black sea bass management activities.

Stock Status

Black sea bass are protogynous hermaphrodites which means they begin life as a female but change sex to male. For black sea bass, this change typically occurs between ages 2 to 5 (9" to 13"). Protogyny increases the uncertainty associated with stock assessments. Black sea bass from Cape Hatteras, NC to the US-Canadian border are managed as a single northern stock.

The northern black sea bass stock is not overfished and overfishing is not occurring.¹ Revised biological reference points (BRP) presented in the Northeast Fisheries Science Center's 2011 stock assessment were rejected by the review committee due to model uncertainties.¹ The target fishing mortality (F) is 0.42, F threshold is $F_{40\%} = 0.44$, target spawning stock biomass (SSB) is 12,537 metric tons (27.6 million pounds), and threshold $SSB_{40\%}$ is 10,886 metric tons (24.0 million pounds).^{2,3} Current F is 0.21 and SSB is 24.6 million pounds.³ Reference points and stock status should be viewed with caution.⁴

Maryland monitors black sea bass juvenile abundance using trawl and beach seine surveys in the Coastal Bays. In Maryland, the geometric mean catch per unit effort (CPUE) for juveniles has varied annually since the surveys began in 1989. There is no CPUE trend for either the trawl or beach seine surveys. Maryland does not collect fishery-dependent black sea bass data.

Current Management Measures

Coastwide, the commercial fishery is allocated 49% of the total allowable catch and the recreational sector is allocated the remaining 51%.³ The 2014 coastwide commercial quota is 2.17 million pounds and the recreational quota is 2.26 million pounds.⁵ Maryland receives 11% of the commercial quota which is 239,000 pounds for 2014.⁶ Within a given fishing season, excess quota in one state can be transferred to another state which has exceeded its quota.

The Maryland commercial black sea bass fishery is limited entry. A permit transfer from a licensed fisherman is required to enter the fishery and individual fishing quotas are assigned to each black sea bass permit card holder. Quota reserved for permit holders who do not enter the fishery is reallocated among declared permit holders. However, an individual is not allowed to have >20% of the quota. Overages are deducted from the following year's quota allocation. Quota is allocated among four commercial sectors: 87% pots, 11% trawl, 1% hook and line, and 1% for all

other fishing gear. Licensed commercial fishermen without a commercial black sea bass permit card are limited to landing 50 lbs per day. The commercial fishery has an 11" minimum size limit.⁷

Maryland's recreational fishery (including federal waters) is managed with a 12½" minimum size, 15 fish per person per day creel, and is open May 19 – September 21 and October 18 – December 31.^{7,8} In Maryland, >75% of the recreational black sea bass fishery occurs in federal waters.⁹ A recreational quota is not allocated among the states but a coastwide total allowable landings (TAL) is determined. As of 2012, states have been allowed to establish their own regulations to comply with ASMFC requirements (conservation equivalency).

The Fisheries

Maryland's commercial harvest quota for 2013 was 239,000 pounds and 219,000 pounds were harvested in 2013 (Figure 1).⁷ As of July 2014, 207,000 pounds¹⁰ of Maryland's 239,000 pound quota had been landed. Maryland's 2015 commercial quota is projected to be 239,000 pounds.¹¹

The recreational harvest limit for 2013 and 2014 is 2.26 million pounds. Maryland's 2013 recreational harvest was 35,100 pounds (proportional standard error = 28.7) and has varied little since 2006 (Figure 2).^{12, 13}

Issues/Concerns

Tagging results indicate that black sea bass migration is limited to regional scales. An age-based model is being used to account for the regional variability. Addenda XXI, XXII, and XXIII have been implemented to facilitate regional management including state-to-state quota transfer. This management framework is being proposed on an annual basis.

The 2012 black sea bass stock assessment peer review rejected the use of an age-based assessment model due to the limited amount of age data for the assessment. The ASMFC convened an ageing workshop for northern stock black sea bass in 2013 to establish standardized methodology to determine ages from otoliths and scales.¹⁴ Standardization of methods will increase the number of data sets that can be incorporated into the assessment models. This would facilitate a transition from length-based to age-based assessment models.

Figure 1. Black sea bass harvested by the commercial fishery in Maryland: 1950 – 2013.^{13,10} (2013 Preliminary harvest, August 8, 2013¹⁰).

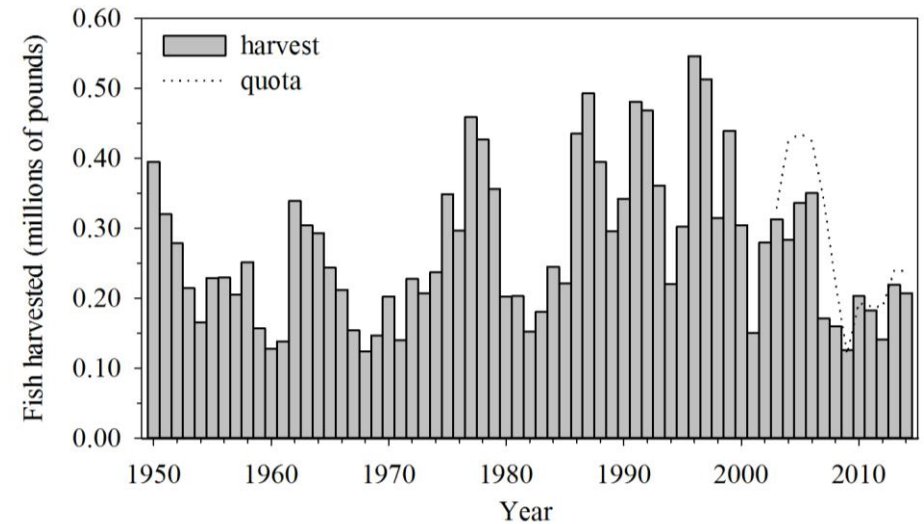
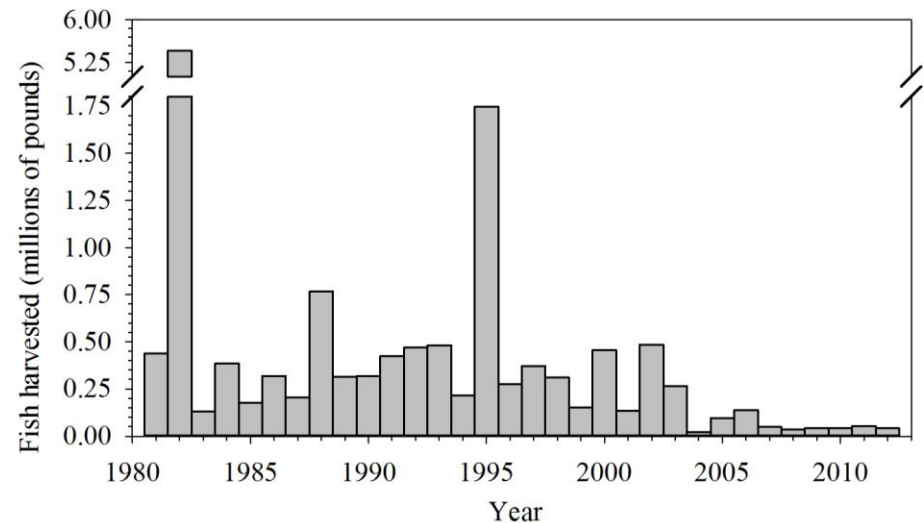


Figure 2. Estimated recreational harvest of black sea bass from Maryland: 1981-2012.¹³



References

¹ Northeast Fisheries Science Center. 2012. 53rd northeast regional stock assessment workshop (53rd SAW) assessment report. US Dept Commerce, Northeast Fisheries Science Center Ref Doc. 12-05; 559 p. Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026

² Miller, T., R. Muller, B. O'Boyle, and A. Rosenberg. 2009. Report by the Peer Review Panel for the Northeast Data Poor Stocks Working Group. NOAA/NMFS, Northeast Fisheries Science Center. Woods Hole, MA.
<http://www.nefsc.noaa.gov/saw/datapoor/DPReviewPanelReportFinal012009.pdf>

³ Atlantic States Marine Fisheries Commission. 2013. 2013 review of the Atlantic States Marine Fisheries Commission fishery management plan for the 2012 black sea bass fishery: Black sea bass (*Centropristis striata*). Atlantic States Marine Fisheries Commission, Alexandria, VA.

⁴ Shepherd GR. 2009. Black sea bass 2009 stock assessment update. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 09-16; 30 p.

⁵ Federal Register / Vol. 78, No. 120 / Friday, June 21, 2013 / Rules and Regulations. Pp 37475-37480. <http://www.gpo.gov/fdsys/pkg/FR-2013-06-21/pdf/2013-14919.pdf>

⁶ Atlantic States Marine Fisheries Commission. 2007. Addendum XIX to the summer flounder, scup, and black sea bass fishery management plan: Summer flounder, scup, and black sea bass management. Atlantic States Marine Fisheries Commission. Washington, DC.

⁷ Doctor, S. 2014. Maryland's 2013 black seas bass (*Centropristis striata*) compliance report to the Atlantic States Marine Fisheries Commission. Maryland Department of Natural Resources. Annapolis, Maryland.

⁸ Federal Register / Vol. 79, No. 129 / Monday, July 7, 2014 / Rules and Regulations. Pp 38259-38265. <http://www.gpo.gov/fdsys/pkg/FR-2014-07-07/pdf/2014-15799.pdf>

⁹ ASMFC. 2013. Addendum XXIII to the summer flounder, scup and black sea bass fishery management plan for black sea bass recreational management in 2013. Atlantic States Marine Fisheries Commission. Arlington, Virginia.

¹⁰ Personal communication from the NOAA Fisheries Service, Northeast Regional Office, Fisheries Statistics Office.
http://www.nero.noaa.gov/ro/fso/reports/reports_frame.htm.

¹¹ Federal Register / Vol. 79, No. 99 / Thursday, May, 22, 2014 / Rules and Regulations.

¹² Doctor, S. 2013. Maryland's 2012 Black Seas Bass (*Centropristis striata*) Compliance Report to the Atlantic States Marine Fisheries Commission. Maryland Department of Natural Resources. Annapolis, Maryland.

¹³ Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division. <http://www.st.nmfs.noaa.gov/st1/commercial/>.

¹⁴ Atlantic States Marine Fisheries Commission. 2013. Proceedings of the 2013 black sea bass ageing workshop. Atlantic States Marine Fisheries Commission. Alexandria, VA.

| 1996 Chesapeake Bay and Atlantic Coast Black Sea Bass Fishery Management Plan Implementation Table (updated 7/2014) | | | |
|--|---|--|--|
| Strategy | Action | Date | Comments |
| 1.1) Reduce fishing mortality, increase YPR and provide more escape opportunities for small BSB to the spawning stock. A maximum spawning potential level of 22-30% should be achieved. | 1.1a) The Bay jurisdictions will implement a 9" minimum size limit for commercial and recreational BSB fisheries in year 1 (1996) and year 2 (1997) of the plan. Beginning in year 3 (1998), the minimum size will be determined by MAFMC on an annual basis. Regulations will be written so that they are applicable to all fish landed in a state, whether caught in state or federal waters. | 1996 1997 Continue | BSB have exceeded the survey index since 2003 and are not considered overexploited. The minimum size limit for the commercial fishery was 11 inches and for the recreational fishery was 11.5 inches with a 25 fish/day /person creel limit. |
| | | 2003 2004 2009 2014 | In MD, individual commercial BSB quota and limit are identified on a BSB permit card. Non permitted individuals are limited to landing ≤50 lbs. MD & VA with an 11" minimum size limit for the commercial fishery. MD recreational minimum BSB size limit increased to 12.5" with a creel limit of 25/person/day VA recreational minimum BSB size limit increased to 12.5" with a creel limit of 25/person/day. MD & VA reduced their recreational creel to 15 fish/person/day. |
| | 1.1b) Based on the MAFMC Monitoring Committee's evaluation of the success of the FMP relative to the overfishing reduction goal, additional restrictions such as seasonal closures, creel limits, quotas, and limited entry, may be established. | Continue 2000 2002 2003 2010 2013 2010 2012 | Amendment 13 of the MAFMC and ASMFC's Summer Flounder, Scup and BSB FMP changed the management of the commercial fishery from coastal quarterly quotas to state by state allocations. MD is allotted 11% of coastwide landings and VA is allotted 20%. The BSB fishery is open year round in MD & VA until quota is met. MD & VA implemented recreational closures from January 1 to May 21 and October 12 to October 31. Closure was revised from January 1-May 18 and September 19-October 17. Stock was assessed in 2010. The black sea bass coastal stock is not overfished and overfishing is not occurring based on 2012 revised BRPs. |
| 1.2) Management agencies will require the use of escape panels, trawl efficiency devices, selective mesh sizes, culling devices and/or other methods to promote gear efficiency and reduce | 1.2a) VA, MD, and PRFC will investigate the potential for innovative devices designed to reduce the bycatch of juvenile finfish in non-selective fisheries. Continued testing of these bycatch reduction devices will be encouraged. | 2000 Continue | PRFC tested plastic escape panels for pound nets. The device can provide escapement provide escapement for up to 80% of undersized fish. |

1996 Chesapeake Bay and Atlantic Coast Black Sea Bass Fishery Management Plan Implementation Table (updated 7/2014)

| Strategy | Action | Date | Comments |
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| bycatch. | 1.2b) VA and MD will work with MAFMC/ASMFC to develop and require the use of more efficient gear consistent with policies designed to reduce bycatch and/or discards. | As specified | No specific gear alterations have been recommended. |
| | 1.2c) VA and MD will implement a mesh size of 4.0 inch diamond mesh for trawl vessels harvesting more than 100 pounds of BSB per trip. Changes in minimum mesh size will be implemented based on MAFMC/ASMFC recommendations. VA will continue its ban on trawling in state waters. PRFC will continue its ban on Potomac River. | 1996 | Mesh size requirements for the commercial fishery are appropriate for the minimum size requirements. |
| | | 1980 | MD COMAR 08.02.05.21: Minimum mesh: larger nets are required to possess a minimum of 75 meshes of 4 ½" diamond mesh in the codend or the entire net must have a minimum mesh size of 4 ½" throughout; smaller nets must have 4.5" mesh or larger throughout. Maximum roller rig trawl roller diameter ≤ 18" |
| | | 1981 | |
| | | 1992 | |
| | | 2004 | |
| | | On-going | |
| | 1.2 d) VA and MD will require escape vents in BSB pots, based on the recommendations of MAFMC/ASMFC. The minimum size requirements will be considered after the MAFMC completes its study on escape vents. | Continue | Chesapeake Bay Program (CBP) jurisdictions are in compliance with vent requirements in pots and traps. |
| | | 1996 | MD COMAR: Unobstructed escape vent in holding chamber of at least 2 ½" diameter, if circular, or 2 ½" stretched mesh size if square. |
| | | 1996 | 4VAC20-950-40: Two escape vents of 2 ½" circular dimension, 2" square dimension, or 1 3/8" by 5 ¾" rectangular dimension. |
| | | 1996 | MD & VA require hinges or fasteners on one side panel or door made of the following materials: a) Untreated hemp, jute, or cotton string of 3/16" or less diameter; b) Magnesium alloy, timed float releases (pop-up devices), or similar magnesium alloy fasteners; or c) ungalvanized or uncoated iron wire of 0.094" or less in diameter. |
| | 1.2e) The jurisdictions will define a BSB pot for enforcement requirements as recommended by the MAFMC. | 2002 | Was not defined because CBP jurisdictional commercial fishermen use lobster pots and fish traps to catch both lobster and black sea bass. |
| | | 2008 | MD COMAR 08.02.05.02: (9) "Fish pot" means a single, finfish entrapment net device, without associated wings or leads, consisting of: (a) An enclosure of various shapes covered with wire, fabric, or nylon mesh webbing of not less than 1 ½" stretched mesh size; (b) One or more conical entrance funnels; (c) One or more unobstructed escape vents, in the holding chamber, of at least 2 ½" in diameter, if circular, or 2 ½" stretched mesh size if square. |

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| | | | VA does not have a fish pot definition. |
| | 1.2f) VA and MD will require that BSB pots and traps have biodegradable hinges and fasteners on one panel or door. | 1996 Completed 2002 | MD & VA require hinges or fasteners on one side panel or door made of the following materials: a) Untreated hemp, jute, or cotton string of 3/16" or less diameter; b) Magnesium alloy, timed float releases (pop-up devices), or similar magnesium alloy fasteners; or c) ungalvanized or uncoated iron wire of 0.094" or less in diameter. Pots and traps having wooden slats will remove one set of parlor slats so it is 1 1/8" apart. |
| 2.1) VA and MD will work with the Institute of Marine Science, Old Dominion, and University of Maryland to promote research concerning the effects of sex-reversal. The stock assessment departments of VMRC, MDNR, and PRFC will continue to collect information on size composition in commercial catches as part of a coastwide effort to monitor the effects of minimum sizes on BSB stocks. | 2.1a) Research on effects of hermaphroditism on yield, spawning stock and other parameters will be encouraged. VMRC's stock assessment department, in cooperation with VIMS, will attempt to determine the appropriate size at which sex reversal takes place for BSB in this region. | Continue 2009 | Although the stock has been rebuilt, management measures have been kept conservative because of unknown population dynamics due to hermaphroditism. Increased uncertainty in the stock assessment model was incorporated because black sea bass are protogynous hermaphrodites,. |
| | 2.1b) VA will continue its annual VIMS Trawl Survey, of estuarine finfish species and crabs found in VA Bay waters, to measure size, age, sex, distribution, abundance, and catch-per-unit-effort (CPUE). | 1997 2002 Continue | BSB were sporadically caught during the 2002-2006 trawl surveys. The majority of BSB abundance and biomass exist in Virginia waters of the Chesapeake Bay. Typically, BSB are first observed during the summer and peak during the fall portions of the survey. BSB may be observed during spring trawls. |
| 2.2) The jurisdictions will promote research to define movements and mortality of BSB between state and federal waters. | 2.2a) VMRC's Stock Assessment Program will continue to collect biological data (age, size, sex) from commercial catches of BSB. | Continue | Biological data is used for the coastal stock assessment. |
| | 2.2b) Research on migration of BSB between inshore and offshore areas will be encouraged. Tagging experiments to provide data on BSB migration may be funded from sales of VA saltwater fishing licenses. | Continue | In VA, black sea bass is 1 of 10 species currently being tagged in the Virginia Volunteer Angler Gamefish Tagging Program. |
| | 2.2c) PRFC will collect information on BSB harvested and discarded in the Potomac River pound net fishery as part of a two year pound net study funded by the Atlantic Coastal Fisheries Cooperative Management Act (ACFCMA). | Continue | PRFC continues to collect BSB harvest data. |
| 2.3) MD, VA and PRFC will continue to support interjurisdictional efforts to maintain a comprehensive database on a baywide scale. | 2.3a) The jurisdictions will collect information on commercial landings. | 2008 | MD does not have a fishery-dependent monitoring program. Data is occasionally collected from the recreational for-hire fishery. Northeast Data Poor Stocks Working Group determined that BSB are undergoing overfishing, but the stock is not overfished. |
| | | 2010 | ASMFC Technical Committee declared stock rebuilt. Revised |

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| | | | BRPs are $F_{40\%} = 0.42$ and $SSB_{40\%} = 27.6$ million pounds. Overfished threshold is $SSB_{threshold} = 24.0$ million pounds. In 2013 $F = 0.21$ and $SSB = 24.6$ million pounds. |
| | 2.3b) VA will continue to supplement MRFSS data with more detailed catch statistics at the state level. | 1996-1997 2012 | MRFSS is used to collect recreational catch data. MRFSS replaced with the MRIP survey. |
| | 2.3c) MD will require mandatory reporting for all black sea bass landed in Maryland, wherever harvested. | Continue | Data is included in commercial fishery statistics. |
| 3.1a) Restoration of aquatic reefs would lead to increased habitat for black sea bass. Jurisdictions will continue to expand and improve their current oyster restoration programs with periodic program evaluations to ensure maximum success. Specific attention should be focused on aquatic reefs in the salinity range of the black sea bass. | 3.1aA) MD and VA will continue implementation of the 1994 Oyster FMP which combines the recommendations of both the VA Holton Plan and the MD Roundtable Action Plan. | Continue | CBP jurisdictions developed a 2004 Oyster Management Plan (2005) which combines the FMP and habitat objectives. It includes reef development using reclaimed and fresh oyster shell, oyster repletion and oyster sanctuary and harvest reserve areas. Maryland is currently managing oyster restoration under the Maryland 10-point Action Plan. |
| | | 2008 | <i>Crassostrea virginica</i> (native oyster) and not <i>Crassostrea ariakensis</i> (Asian oyster) will be used for reef development following the Environmental Impact Statement for Oyster Restoration in Chesapeake Bay Including the Use of a Native and/or Nonnative Oyster. |
| | | 2010 | Maryland is implementing a 10-point Oyster Restoration and Aquaculture Development Plan. The plan increases the network of oyster sanctuaries from 9% of available habitat to 25%. The priority targeted restoration areas are Harris Creek, Tred Avon and Little Choptank. |
| | 3.1aB) MD and VA will continue the implementation of the Aquatic Reef Habitat Plan. | Continued 2007 | Artificial Reef Committee, Maryland Artificial Reef Initiative, and Maryland's Artificial Reef Management Plan were developed and several reefs have been created in Bay and the Atlantic Ocean. |
| | | Continue 2010 On-going | Reefs are qualitatively monitored with underwater video. ARC and MARI have begun support for shallow water (<20 ft.) reef projects. For a complete list of reef sites go to http://dnr2.maryland.gov/fisheries/Pages/reefs/index.aspx |
| 3.1b) The creation of new artificial reefs and the expansion and improvement of preexisting reefs will provide additional habitat for the BSB population. | 3.1bA) Jurisdictions will continue to maintain, expand, and improve their artificial reef programs. | Continuing | In VA, artificial reefs are being funded through Recreational Advisory Board. All artificial reefs created by funds from recreational license revenues adhere to the gear type prohibition. |
| | | 1996-2006 | MD terminated its program in 1996. Artificial reef development |

1996 Chesapeake Bay and Atlantic Coast Black Sea Bass Fishery Management Plan Implementation Table (updated 7/2014)

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| | <p>alternative. Use structures that cause the smallest increase in local wave energy where planting vegetation is not feasible.</p> <ul style="list-style-type: none"> Educate the public about the potential negative effects of recreational and commercial boating on SAV and how to avoid or reduce them. | <p>2013</p> <p>2008</p> | <p>2011 and concluded that the projects were operationally successful but functionally unsuccessful. The restoration planting goal was revised to 20 acres per year.</p> <p>A new Chesapeake Watershed Agreement was adopted (June 2014) to achieve the ultimate goal of 185,000 acres of SAV baywide with a target of 90,000 acres by 2017 and 130,000 acres by 2025.</p> <p>MD legislated that shoreline stabilization projects must use living shoreline techniques unless demonstrated to be infeasible.</p> |
| | 3.2b) Set and achieve regional water and habitat quality objectives that will result in restoration of SAV through natural revegetation as recommended by the Chesapeake Bay SAV Policy Implementation Plan. | Continuing | <p>Water quality criteria have been adopted http://www.chesapeakebay.net/issues/issue/nutrients.</p> |
| | 3.2c) Set regional SAV restoration goals in terms of acreage, abundance, and species diversity considering historical distribution records and estimates of potential habitat as recommended by the Chesapeake Bay SAV Policy Implementation Plan. | <p>2003</p> <p>2011</p> <p>On-going</p> | <p>Bay wide SAV restoration goal was 1,000 acres planted by 2008. Restoration planting goal was revised to 20 acres per year. Little progress has been made since 2010 and a SAV restoration goal was not included in the new Chesapeake Watershed Agreement. One acre was planted in 2013. SAV covered 59,927 acres in 2013.</p> <p>See Chesapeake Bay Program website for updates on SAV restoration. http://www.chesapeakebay.net/indicators/indicator/planting_bay_grasses</p> |
| 3.3) Establish a goal of no net loss of wetlands and a long term goal of a net resource gain for tidal and nontidal wetlands as recommended in the Chesapeake Bay Wetlands Policy. | <p>3.3) Jurisdictions should strive towards achieving the following, especially in the salinity range of BSB.</p> <ul style="list-style-type: none"> Define the resource through inventory and mapping activities. Protect existing wetlands. Rehabilitation, restoring and creating wetlands. Improving education. Further research. | <p>Continuing</p> <p>2006</p> <p>Continuing</p> <p>2006</p> <p>Continue</p> <p>2009</p> <p>Continue</p> | <p>Programs have been expanded to the tributaries.</p> <p>GIS mapping activities are underway to target protection and restoration efforts habitat resources, but habitats are not targeted for a single, specific species' benefit. MD developed a Blue Infrastructure that includes mapping of BSB habitats such as structural habitat and SAV.</p> <p>MD developed a Blue Infrastructure that includes mapping structural habitat and SAV.</p> <p>Wetland mosquito ditches from the 1930s-1940s are being plugged to reduce tidal flow and restore wetland hydrology and function.</p> |

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| | | 2012 | <p>Wetland enhancement and restoration is tracked cumulatively among tidal and non-tidal wetlands and salinity regimes. Between 2010 and 2012, wetland acres established or re-established in MD = 1,646 and in VA = 16,853. Wetland acres enhanced or rehabilitated from 2010-2012 in Chesapeake Bay watershed was 5,503.</p> <p>See Chesapeake Bay Program website for updates on wetland rehabilitation and restoration. http://www.chesapeakebay.net/indicators/indicator/tidal_wetlands_abundance</p> <p>http://www.chesapeakebay.net/indicators/indicator/restoring_wetlands</p> |
| 3.4) Jurisdictions will continue efforts to improve baywide water quality through the efforts of programs established under the 1987 Chesapeake Bay Agreement. In addition, the jurisdictions will implement new strategies, based on recent program reevaluations, to strengthen deficient areas. | 3.4a) Based on the 1992 baywide nutrient reduction plan reevaluation, the jurisdictions will: <ul style="list-style-type: none"> • Expand program efforts to include tributaries. • Intensify efforts to control nonpoint sources of pollution from agriculture and developed area. • Improve on current point and nonpoint source control technologies. | Continue | <p>Maps that indicate regions of concerns for living resources have been developed.</p> <p>See Chesapeake Bay Program website for updates on nutrient reduction. http://www.chesapeakebay.net/track/restoration.</p> |
| | 3.4b) Based on the 1994 Chesapeake Bay Toxics Reduction Strategy Reevaluation Report, the jurisdictions will emphasize the following four areas: <ul style="list-style-type: none"> • Pollution Prevention: Target “Regions of Concern” and “Areas of Emphasis. • Regulatory Program Implementation: Insure that revised strategies are consistent with and supplement pre-existing regulatory mandates. • Regional focus: Identify and classify regions according to the level of contaminants. • Directed Toxics Assessment: Identify areas of low level contamination, improve tracking and control of non-point sources. | 2009 2012/2014 | <p>President Obama executive order recommitting federal agencies to Bay restoration and regulatory enforcement.</p> <p>The Chesapeake Bay Program and Chesapeake Bay jurisdictions signed a new Watershed Agreement with 2 year milestones for nutrient reduction and water quality improvement.</p> |
| | | Continue | <p>See Chesapeake Bay Program website for updates on nutrient reduction. http://www.chesapeakebay.net/track/health/factors</p> <p>Chesapeake Bay Program is monitoring levels of mercury, PCBs, PAHs, organophosphate and organochloride pesticides.</p> |

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| | 3.4c) The jurisdictions will continue to develop, implement and monitor their tributary strategies to improve bay water quality. | Continuing 2010 2013 | Ambient water quality criteria of DO, water clarity, and chlorophyll-a have been adopted for the Chesapeake Bay (April 2003). EPA's Phase I TMDL requirements (WIP development) completed. Phase II requirements have been initiated. Targets and progress will be evaluated in 2017 and Phase III WIPs will be developed. |

Acronyms

ASMFC – Atlantic Marine Fisheries Commission
 BSB – Black Sea Bass
 CB – Chesapeake Bay
 COMAR – Code of Maryland
 CPUE – Catch per Unit Effort
 DO – Dissolved Oxygen
 EPA – Environmental Protection Agency
 F – Fishing Mortality
 FMP – Fisheries Management Plan
 GIS – Geographic Information System
 MAFMC – Mid-Atlantic Fisheries Management Council
 MDE – Maryland Department of the Environment
 MDNR – Maryland Department of Natural Resources
 MRFSS – Marine Recreational Fisheries Statistics Survey
 NMFS – National Marine Fisheries Service
 PAH – Polycyclic Aromatic Hydrocarbon
 PCB – Polychlorinated Biphenyl
 PRFC – Potomac River Fisheries Commission
 SAV – Submerged Aquatic Vegetation
 SSB – Spawning Stock Biomass
 STAC – Scientific and Technical Advisory Committee
 TAL – Total Allowable Catch
 TMDL – Total Maximum Daily Load
 USACE – U.S. Army Corps of Engineers
 USFWS – U.S. Fish and Wildlife Service
 VAC – Code of Virginia
 VIMS – Virginia Institute of Marine Science
 VMRC – Virginia Marine Resource Commission
 WIP – Watershed Implementation Plan
 YPR – Yield per Recruit